The Availability and Utilization of 401(k) Loans

The Availability and Utilization of 401(k) Loans

Faculty Research Working Paper Series

John Beshears

Stanford University and NBER

James J. Choi

Yale School of Management and NBER

David Laibson

Harvard University and NBER

Brigitte C. Madrian

Harvard Kennedy School and NBER

June 2011
RWP11-023

The Availability and Utilization of 401(k) Loans

John Beshears
Stanford University and NBER

James J. Choi
Yale University and NBER

David Laibson
Harvard University and NBER

Brigitte C. Madrian
Harvard University and NBER

May 20, 2011

Abstract: We document the loan provisions in 401(k) savings plans and how participants use 401(k) loans. Although only about 22% of savings plan participants who are allowed to borrow from their 401(k) have such a loan at any given point in time, almost half had used a 401(k) loan over a longer, seven-year horizon. The probability of having a loan follows a hump-shaped pattern with respect to age, job tenure, account balance, and salary, but conditional on having a loan, loan size as a fraction of 401(k) balances declines with respect to these variables. Participants are less likely to use loans in plans that charge a higher interest rate, and loans are smaller when plans allow fewer simultaneously outstanding loans, impose a shorter maximum possible loan duration, or charge a lower interest rate.

The research reported in this paper was supported by a grant from the U.S. Social Security Administration (SSA), administered by the Retirement Research Consortium (RRC). Additional financial support from the National Institute on Aging (grants R01-AG021650 and T32-AG00186) is gratefully acknowledged. The findings and conclusions expressed are solely those of the authors and do not represent the views of SSA, the NIA, any other agency of the Federal Government, the NBER, or the RRC. See the authors' websites for a list of their outside activities. We thank Gopi Shah Goda for useful comments on the paper. We also thank Aon Hewitt for providing data and insights into 401(k) loans from the perspective of a plan administrator. We are particularly grateful to Pam Hess, Yan Xu, and Kirsten Bradford for their feedback. We are also indebted to Yeguang Chi, Eric Zwick, Anna Blank, Patrick Turley, John Klopfer, Jung Sakong, Gwendolyn Reynolds, and Chelsea Zhang for their research assistance.

Borrowing from defined contribution savings plans, including 401(k) plans, has long been permissible. Nevertheless, the impact of this borrowing on economic outcomes has only recently begun to attract attention in the academic and policy worlds. The growth of 401(k) loans, coupled with the introduction of the 401(k) debit card,[1] motivated Senators Herb Kohl and Michael Enzi to propose legislation that would limit the number of outstanding 401(k) loans to three per participant and ban 401(k) debit cards outright.[2] The concern is that easy access to one's retirement nest egg will lead to excessive consumption in the present at the expense of future financial security.

This paper is the first step in a research agenda on how the availability of 401(k) loans affects retirement wealth accumulation. The aims of the current paper are descriptive. We document both the widespread availability and utilization of 401(k) loans. About 90% of 401(k) participants are in plans that offer a loan option. Within those plans, about one in five eligible participants has a loan outstanding at a given point in time. Loan utilization rates follow hump-shaped patterns with respect to age, tenure, compensation, and plan balances, reaching peaks for participants in their 40s, those with 10 to 20 years of tenure, those earning $40,000 to $60,000 per year, and those with $20,000 to $30,000 in plan balances. Conditional on having a loan, the loan balance to 401(k) balance ratio is declining in age, tenure, compensation, and 401(k) plan balance.

Despite the prevalence of 401(k) loans, they constitute only 2.5% of total plan assets among plans with a loan option (Profit Sharing/401(k) Council of America, 2010). For some individuals, however, 401(k) loans can be an important source of credit. Our empirical analysis finds that 401(k) loan utilization is correlated with the types of loan rules adopted by firms. Loans are more likely to be used in plans that charge low interest rates, and conditional on taking a loan, loan sizes are larger when multiple loans are allowed to be outstanding simultaneously, the maximum loan duration allowed is long, and the loan interest rate is high.

The rest of the paper is organized as follows. In Section I, we describe the various sources of data that we use. Section II discusses the availability of 401(k) loans. In Section III, we explain how 401(k) loans work and describe the loan features that plan sponsors offer. Section IV assesses how savings plan participants utilize 401(k) loans. Section V concludes.

[1] See Burton (2008) on the 401(k) debit card.
[2] The Savings Enhancement by Alleviating Leakage in 401(k) Savings Act of 2011 (SEAL) was submitted to the Senate on May 18, 2011 (http://www.govtrack.us/congress/bill.xpd?bill=s112-1020).

I. Data on 401(k) Loans

We exploit several different sources of data on 401(k) loans in this paper: published statistics, household survey data, firm-level 401(k) plan documents, and participant-level 401(k) administrative data. We briefly describe each primary data source and its strengths and weaknesses.

The first source of data is published statistics from a joint data collection effort by the Employee Benefit Research Institute (EBRI) and the Investment Company Institute (ICI). The EBRI/ICI database contains administrative data on 401(k) participants and their 401(k) plans from thousands of firms that are affiliated with either EBRI or ICI. In 1996, the first year for which such data were collected, the EBRI/ICI database included almost 28,000 401(k) plans with over 6.5 million plan participants, representing 9% of all 401(k) plans, 18% of all 401(k) participants, and 31% of all 401(k) assets (VanDerhei et al., 1999). Over time, the coverage of the EBRI/ICI database has expanded: in 2009, it included almost 52,000 plans covering 21 million participants, representing 10% of all plans, 42% of all participants, and 44% of all assets (Holden, VanDerhei, and Alonso, 2010). Although the EBRI/ICI database is not a random or stratified random sample of either 401(k) plans or 401(k) participants, its distributions of total plan assets and number of plan participants are very similar to those of the entire universe of 401(k) plans,[3] making the data fairly representative at least on those dimensions. The 401(k) loan statistics published for the EBRI/ICI database include the fraction of firms offering 401(k) loans, the fraction of 401(k) participants utilizing such loans, and the average outstanding balance of 401(k) loans, all reported separately by plan size and by participant demographic characteristics. The strengths of the EBRI/ICI statistics include their broad coverage of the 401(k) market and their consistent reporting over the 1996 to 2009 time period. Their weakness is that the sample of firms included in the calculations is neither constant nor completely representative over time, so it is never clear whether differences over time and across plan and participant characteristics represent true differences or just different selection into the sample.

The second source of data is published tabulations from the Employee Benefits Surveys (EBS) conducted by the Bureau of Labor Statistics. These surveys, which have been conducted

[3] Holden, VanDerhei, and Alonso (2009) benchmark the representativeness of the EBRI/ICI database to data published by Cerulli Associates on the entire universe of 401(k) plans.

periodically since the early 1980s, were designed to be nationally representative of certain types of occupations in certain types of firms. The number of firms surveyed is substantially smaller than the number of firms in the EBRI/ICI database (totaling in the low thousands rather than the tens of thousands). The strength of these data is their representativeness for the population covered by the survey design. The weaknesses of the EBS data are several: (1) the survey population covered is somewhat limited,[4] (2) there is a high non-response rate both for firms and for the questions specific to retirement plans among the firms that did respond,[5] (3) the only statistic reported related to 401(k) loans is the fraction of 401(k) plan participants who are in plans with a loan option,[6] and (4) this statistic was only reported in the 1993, 1995, and 1997 surveys.

The third source of data is published statistics from the Profit Sharing/401(k) Council of America (PSCA). The PSCA data are derived from a survey of employers offering either profit-sharing or 401(k) plans and have two advantages over other data. First, they offer a long historical perspective on loan availability, loan provisions, and loan utilization, with data going back to 1990 for 401(k) loans.[7] Second, the PSCA surveys collect extensive information on the loan provisions at sampled firms. As with the EBRI/ICI data, the primary weakness of this data source is that the sample of firms included is neither representative nor constant over time.

The fourth source of data we use is the Survey of Consumer Finances (SCF), a triennial survey of households. The primary advantages of these data are that the sampling is designed to be nationally representative (when appropriately weighted), the data are publicly available at the individual level (as opposed to available only at the aggregate level in the form of summary statistics, as is the case with the previous three data sources), the data include information about portions of the household balance sheet other than the employer-sponsored savings plan, and the

[4] The survey population is limited to certain occupations in private, non-agricultural, non-household establishments with 100 or more employees. The published numbers on savings plans with a loan option are limited to full-time workers. The Bureau of Labor Statistics (1998) reports that 33.4 million full-time workers fell within the scope of the 1995 survey tabulations, which is much less than half of the full-time private sector labor force in 1995.

[5] The Bureau of Labor Statistics (1998) reports that 60% of the establishments selected for the 1995 survey responded. Among responding establishments, 30% of the retirement plan participants represented in the data had their retirement plan provisions imputed due to missing data.

[6] A handful of loan-related provisions for other categories of defined contribution savings plans (e.g. savings and thrift plans, deferred profit sharing plans) are reported. These include whether loans are restricted to cases of hardship, whether participants' full account balances are available to be borrowed, and the length of the repayment period. The vast majority of savings and thrift plans are also 401(k) plans, but the converse is less likely to be true.

[7] The PSCA first began surveying firms offering profit-sharing plans in 1957. Over time, as regulatory changes led many profit-sharing plans to incorporate a 401(k) component, the survey framework was adjusted to incorporate 401(k) plans as well as profit-sharing plans.

data include questions on savings plan loans going back to 1989. The primary disadvantage of the SCF is that the questions on savings plan loans are asked only of savings plan participants (and not of those eligible to participate but not currently participating) and are fairly limited. Nonetheless, it is the only source of information on the reasons why individuals borrow from their savings plans.

Our final two sources of data come from Aon Hewitt, a firm that administers many 401(k) plans. The first consists of plan descriptions from years ranging from 2002 to 2004 for 87 401(k) plans that offer loans at 79 large companies. The primary advantage of these data is the level of detail they give about the loan provisions in these 401(k) plans. The primary disadvantages are the limited number of firms in the sample and the fact that they are not representative of the universe of firms offering 401(k) loans, although they may be somewhat representative of large firms that offer 401(k) loans.

Our second source of data from Aon Hewitt is a series of year-end cross-sections from 2002 to 2008. The cross-sections include individual-level data on all employees eligible to participate in their companies' 401(k) plans. They contain demographic information such as birth date, hire date, gender, and compensation.[8] They also contain information on each individual's 401(k), including participation status in the plan at year-end, date of first participation, monthly contribution rates, asset allocation, plan balances, and 401(k) loans outstanding at the end of the year. For participants with a loan, we know the date on which each loan was taken out, the loan terms (interest rate, amount due per payment, scheduled payment frequency, and total number of payments due), and whether the loan was delinquent or had been converted to a taxable withdrawal due to non-payment. The primary advantage of this data source is the amount of information on loans and other aspects of individuals' 401(k) accounts. This allows us to examine in greater detail how 401(k) participants utilize 401(k) loans.

II. Availability of 401(k) Loans

The regulation of 401(k) loans is shared by the Department of the Treasury and the Department of Labor, the two agencies that jointly regulate tax-favored savings plans.[9] Under the Internal Revenue Code, qualified retirement savings plans may (but are not required to)

[8] The data on compensation are not reported for all companies.
[9] See U.S. GAO (2009) for a summary of the laws that regulate 401(k) loans.

provide plan participants with the option of obtaining one or more loans against their plan balances.[10] If plans do make loans available, they must be made available to all participants on a reasonably equivalent basis.

There are two sources of data on the fraction of 401(k) plans with a loan option: the EBRI/ICI database and the PSCA surveys. Using the EBRI/ICI database (which covers many more firms than the PSCA surveys), Holden, VanDerhei, and Alonso (2010) calculate that 61% of plans in 2009 include a loan provision. Loan availability is much higher in the PSCA data, with 88% of plan respondents offering a loan option in 2009 (Profit Sharing/401(k) Council of America, 2010). Both data sources indicate some increase in the availability of loans over time (Figure 1). Large plans are more likely to offer a loan provision than small plans (Figure 2). In the 2009 EBRI/ICI data, 94% of plans with more than 10,000 participants offered loans, compared to only 35% of plans with 10 or fewer participants (Holden, VanDerhei, and Alonso, 2010). The patterns in the PSCA surveys are similar, although the gradient with respect to plan size is much smaller.

Because most individuals work in large companies and large plans are more likely to offer loans, the fraction of 401(k) participants whose plan offers loans is much higher than the fraction of 401(k) plans that offer loans. In the most current EBRI/ICI data year (2009), 89% of 401(k) participants belong to a plan offering loans, even though only 61% of the plans in the data offer loans (Holden, VanDerhei, and Alonso, 2010). The fraction of plans with a loan provision has increased only slightly in the past decade, but the EBRI/ICI data suggest that the fraction of participants whose savings plan offers a loan option has increased substantially during that time, from 70% in 1996 to 89% in 2009 (Figure 3). The EBS also collected data on the fraction of 401(k) participants with a loan option during the 1990s. Although the prevalence of loans in the EBS is much lower than in the EBRI/ICI data, the EBS also shows an increase in loan access from 43% of participants in 1993 to 51% in 1997 (Bureau of Labor Statistics, 1995, 1998 and 1999).

Note that in 1997, the one year when the two data sources overlap, there is a sizeable discrepancy in the fraction of participants reported to belong to a plan with a loan option: 51% in the EBS data versus 79% in the EBRI/ICI data. It is not obvious how to interpret this

[10] Qualified plans are those that satisfy the requirements of I.R.C. 401(a), annuity plans that satisfy 403(a) or 403(b), and governmental plans (Internal Revenue Service, 2011). Loans are not permitted from IRAs, SEPs, or other similar plans.

discrepancy. Neither sample is completely representative of all 401(k) plans. The EBS is designed to be representative of certain occupations in private establishments with at least 100 employees, so small employers (and thus small savings plans) and workers in several occupations are necessarily excluded. The EBRI/ICI database, while not designed to be representative, does include small plans and appears to be fairly representative of the 401(k) plan universe on several dimensions; it also covers a sizeable share of the total market. The fact that the EBRI/ICI number is higher than the EBS number is puzzling given the exclusion of smaller firms from the EBS data, since loans are less likely to be offered in smaller plans than in larger ones. If the EBS survey had included smaller firms, the gap between the EBS and EBRI/ICI estimates of loan availability would have been even larger. Both data sources indicate that 401(k) loan availability has grown over time, but what is less clear is exactly how many participants had a loan option available at any particular point in time.

III. 401(k) Loan Provisions

The terms of a 401(k) loan are set by individual savings plans within certain regulatory bounds. When a loan is made to a 401(k) participant, the plan liquidates some of its assets to make the loan disbursement. The participant is then responsible for the timely repayment of the loan. Loan payments, which include both principal and interest, are made with after-tax dollars and are credited to the participant's account, transferring principal back into the participant's investments.

There are no regulatory restrictions on how the proceeds from a 401(k) loan may be used; nor are borrowers required to demonstrate financial need.[11] Plan sponsors have discretion to impose such restrictions if desired, but most do not. The PSCA (1999) reports that among savings plans with a loan option, 82% place no restrictions on how loan proceeds may be utilized.[12] Of the 18% of plans with restrictions, most allow loans for home purchases, education, and medical expenses.

[11] In contrast, hardship withdrawals—which plans are allowed but not required to offer—are limited by regulation to be used for "immediate and heavy" expenditures for which no other resources are available. Allowable expenditures include medical expenses, educational expenses, burial or funeral expenses, expenditures related to the purchase of a home, and payments necessary to forestall eviction or foreclosure.

[12] Restrictions are more common in profit sharing plans (27%) than in 401(k) plans (16%), and are more common in smaller plans than in larger ones (Profit Sharing/401(k) Council of America). Similarly, data from the EBS suggest that only 7% of savings and thrift plans place restrictions on how loan proceeds may be used (most savings and thrift plans are 401(k) plans).

There are, however, regulations on the maximum size of 401(k) loans. The total outstanding principal of all unpaid loans can be no larger than the minimum of 50% of a participant's vested account balance and $50,000 (employers can place additional size limits).[13] The only information we have on the actual maximum limits that plan sponsors place on 401(k) loan size comes from our sample of Aon Hewitt plan descriptions. In this sample, all plans adhere to the statutory limits, although some do so with some minor modifications.[14]

Plans can also place restrictions on the minimum loan size. In the 2009 PSCA annual survey, only 3% of plans report having no minimum loan limit. Twelve percent of plans report a positive limit of $500 or less; 84% report a limit between $501 and $1,000; and the remaining 2% report some other limit. In our sample of Aon Hewitt plan descriptions (Table 1), the minimum loan amounts are roughly in line with those in the PSCA survey: 28% have a minimum loan amount of $500 or less[15]; 69% have a minimum loan amount between $501 and $1,000; and 3% have a minimum loan amount greater than $1,000.

Plans are allowed to charge both an application fee and an annual service fee for each 401(k) loan. Survey data from the PSCA suggest that such fees are becoming more common. In the 1990 PSCA survey, only 26% of plans reported having loan fees; in the 2009 survey, this number had risen to 90%. The most common fee is a loan origination or application fee, which 85% of 2009 PSCA plans report having; among these plans, the median application fee is $75. Twenty-eight percent of plans report charging an annual maintenance fee, with a median amount of $25. Ten percent of plans report charging some other sort of fee. In our sample of Aon Hewitt plan descriptions, 43% either report having no fees or make no mention of any fees (Table 1). Of the remaining plans, none report having any fees other than application fees, which range from $25 to $100 for general purpose loans, with a median of $50.[16]

[13] The regulatory language also suggests that employers have discretion to allow loans of up to $10,000, even if this exceeds the limit of 50% of a participant's vested balance. Conversations with plan administrators suggest that in practice this is rarely allowed because of concerns that doing so could violate regulatory provisions in ERISA. Participants affected by the 2005 hurricanes Katrina, Rita, or Wilma face a higher limit: the lesser of $100,000 or 100% of the participant's account balance.

[14] Other restrictions included additional limits on loan amounts for participants with assets allocated to a self-directed brokerage window or employer stock.

[15] Only one firm in the Aon Hewitt sample has a loan minimum of less than $500.

[16] Two of the plans in the Aon Hewitt sample have a higher fee for primary residence loans than for general purpose loans. One company has a higher fee for loans requested through a benefits representative than for loans requested on the benefits website, and we use the lower fee for Table 1.

Employers may allow participants to have more than one loan outstanding simultaneously, although the loans would in total be subject to the maximum loan size restrictions noted previously. In the latest PSCA survey, about half of plans allow participants to have more than one loan outstanding. Large plans are much more likely to allow multiple loans than small plans: for example, 38% of plans with fewer than 50 participants allow multiple loans, while 57% of plans with over 5,000 participants do. Figure 4 shows the distribution of the maximum number of loans allowed in the 2009 PSCA survey.[17] Most (52%) allow only one loan, 37% allow two loans, and 8% allow three loans. Only 3% of plans allow four or more loans. In our sample of Aon Hewitt plan descriptions, 33% restrict participants to only one loan, 56% allow participants to take out two loans, and 10% allow three or more loans (Table 1).

Employers have some discretion in establishing loan repayment procedures. Regulations require that loan payments be made at least quarterly and pay down both principal and interest. In practice, many companies use automatic payroll deduction for loan repayments, so loan payments are made on a monthly or biweekly basis. The amortization period for a 401(k) loan can typically be chosen by participants within a set of constraints established by the plan. These constraints are dictated in part by regulatory requirements. One such requirement is that general purpose loans must be repaid within five years, although employers can choose a shorter maximum repayment horizon. Employers can establish a longer repayment period for loans taken for investment in a primary residence. Early repayment of loans (potentially with a prepayment penalty) is also allowed.[18]

Our source of information on the distribution of both minimum and maximum loan amortization periods is the sample of Aon Hewitt plan descriptions (Table 1). In this sample, about two-thirds of plans have a minimum duration of more than six months for general purpose loans; the rest either do not specify a minimum repayment period or specify a shorter minimum repayment period (usually one or six months). Almost three-quarters of plans have a maximum repayment period of five years for general purpose loans, the statutory maximum; the remaining quarter either do not specify a maximum repayment period or specify a shorter repayment period, usually between four and five years.

[17] This figure includes both profit-sharing and 401(k) plans, as the PSCA does not report the distribution of permissible loans separately by defined contribution plan type. The fraction of plans that allow more than one loan is reported separately by plan type, and this fraction is similar for both types of plans.

[18] Prepayment penalties appear to be rare. None of the plans in our Aon Hewitt sample of plan descriptions imposes a prepayment penalty.

Of the plans in the Aon Hewitt plan description sample, all offer general purpose loans, and 74% allow both primary residence and general purpose loans (Table 1). The main distinction between general purpose and primary residence loans is that the latter can have a longer repayment period and the plan must verify that the loan is being used for a primary residence. Primary residence loans require both additional documentation from applicants and additional processing by plan sponsors.[19] As with general purpose loans, the modal minimum repayment period for primary residence loans is twelve months, but plans often stipulate a longer minimum loan duration. Forty-two percent of the Aon Hewitt plans have a minimum repayment period exceeding twelve months for a primary residence loan, and a minimum repayment period of five to six years is the most common within this subset of plans. The maximum repayment period for primary residence loans varies widely across plans, ranging from 117 months to 360 months. The modal maximum repayment duration is 180 months (fifteen years).

Loan repayments are made with after-tax dollars and are not counted as plan contributions (and thus do not count against annual plan contribution limits), even though both the principal and interest payments are credited to participants' accounts. Interest payments are not tax deductible, even if the purpose of the loan was for a primary residence, because the loan is not secured by the residence as the IRS requires for mortgage interest tax deductibility.

Plans have discretion in determining the interest rate for 401(k) loans, although the interest rate chosen must be reasonable, meaning that it must be similar to what other financial institutions are charging for similar types of loans. In practice, most savings plans that allow loans peg their interest rate to the prime rate. In the most recent PSCA survey that reports how plans determine their 401(k) loan interest rate, 86% of plans report pegging their interest rate to the prime rate. In our sample of Aon Hewitt plan descriptions, 91% of plans peg their interest rate to the prime rate (Table 1). There is, however, variation in the spread between the prime rate and the 401(k) loan rate. Twenty-five percent of Aon Hewitt plans set their interest rate equal to the prime rate, 60% set it to the prime rate plus 0 to 1% (not including 0), and 6% set it to the prime rate plus 1 to 2% (not including 1). There is also some variation in the frequency with which 401(k) loan interest rates are updated. Most (54%) of the Aon Hewitt plans adjust their

[19] In plans that do not offer both general purpose and primary residence loans, participants can apply for a general purpose loan and use the proceeds for their primary residence. Such a loan would not require additional documentation regarding its purpose and would have to be repaid in five years (or less, if the plan has a shorter maximum loan duration).

interest rate monthly, but 33% adjust only quarterly, 5% adjust daily, and the rest adjust at some other frequency (including one plan that adjusts only once a year). This increases variation in 401(k) loan interest rates across plans during periods when the prime rate is changing frequently.

We can look at the participant-level data from our sample of Aon Hewitt plans to get a sense for how 401(k) interest rates vary across firms and how they have evolved over time. We use the set of 27 plans at 25 companies for which we have year-end data in every year from 2002 to 2008. For each company, we calculate the modal interest rate of loans originated in each month.[20] Because we have data not only on newly originated loans, but also on all loans outstanding at year-end, we can examine interest rates prevailing before the initial 2002 cross-section to the extent that loans taken out before that time have not yet been fully repaid by year-end 2002. This gives us a long time series of interest rates. Figure 5A shows, across these 27 plans, the median, 25th, and 75th percentile of firm-level modal interest rates by loan origination month. The difference between the 25th and 75th percentile interest rates across firms is almost always 100 basis points. As expected, given how 401(k) loan interest rates are set, the median interest rate tracks the prime interest rate fairly closely, as seen in Figure 5B.

If a participant defaults on his or her loan, the outstanding balance at the time of default is treated as a taxable distribution from the plan and is subject to the 10% early withdrawal penalty for participants under the age of 59½.[21] If a participant's employment is terminated, most companies stipulate that the loan must be repaid in full within a reasonable period of time, or the outstanding loan balance is treated as a taxable distribution from the plan. Some companies, however, may allow terminated employees to continue repaying their 401(k) loans over a longer period of time. The Aon Hewitt plan descriptions show some heterogeneity across firms as to when a loan is deemed to be in default and when it becomes a taxable distribution, but generally, terminated participants have 60 to 90 days to repay a loan before it becomes a taxable distribution. Current employees of the company have a similar amount of time to become current on a loan whose payments are in arrears.

[20] There tends to be little heterogeneity in interest rates among loans originated in a particular plan in a given month. However, loan interest rates can vary within a plan for a given month due to within-month movements in the prime rate, differential delays between loan application and disbursement, and participants of acquired firms who took out loans under their former plans. This is why we use the modal interest rate, which is almost always identical to the median interest rate (and often is also the 5th percentile and 95th percentile interest rate) among loans originated in a particular plan-month.

[21] Plans may suspend loan payments for employees on active military duty. They may also suspend payments for employees on non-military leave for up to one year.

IV. 401(k) Loan Utilization

We now turn to an assessment of how individuals use 401(k) loans. Figure 6 plots the fraction of 401(k) participants in plans with a loan option who have at least one outstanding 401(k) loan, as reported by the PSCA, as reported by the Investment Company Institute (using the EBRI/ICI data), and from our own calculations using the Aon Hewitt participant-level data. In the EBRI/ICI data, the fraction of participants with a loan has been relatively stable over time, ranging between 16% and 21%. The fraction of participants with a loan is somewhat higher in the PSCA surveys, ranging from 19% to 33%, although it stabilized around 24% during the past several years. In the Aon Hewitt data, a nearly constant 21% to 22% of participants have an outstanding loan at year-end between 2002 and 2008.[22] If we restrict the Aon Hewitt sample to participants who remain employed at the same company for all seven years, an average of 31% have a loan in any given year, but a much higher 44% have a loan at some point during the entire seven-year period. Annual loan utilization figures are thus likely to substantially understate the fraction of participants who could be affected by a change in plan loan policies or federal regulations of 401(k) loans.

In the first two columns of Table 2, we report, separately by demographic characteristics, the fraction of participants who have a 401(k) loan in 401(k) plans that allow loans. The numbers in column 1 are from the EBRI/ICI data for calendar year 2008, and the numbers in column 2 are from the Aon Hewitt participant-level data at year-end 2008. Loan utilization follows a hump pattern with respect to age, peaking in the 40s at 22% in the EBRI/ICI data and 26% in the Aon Hewitt data. Employees in their 20s or 60s have substantially lower loan utilization rates (between 10% and 14%). Loan utilization also follows a hump pattern with respect to tenure, peaking at 26% in the EBRI/ICI data and 33% in the Aon Hewitt data for employees with 10 to 20 years of tenure. Employees with two or fewer years of tenure have very low utilization rates, likely reflecting the fact that employees must accumulate some balances in their savings plan before they can take out a loan. Loan utilization rates are fairly flat around 25% (EBRI/ICI) and 30% (Aon Hewitt) across much of the distribution of plan assets, but show a marked decline once plan balances exceed $200,000 or fall below $10,000. For low-balance participants, loan

[22] These numbers are very similar to the results of internal calculations by Aon Hewitt on the fraction of their plan participants with a 401(k) loan over the same time period (Aon Hewitt, 2011).

utilization is limited by institutional constraints. First, in most firms, taking out a loan is not feasible until participants have reached a certain level of balances due to restrictions on the minimum loan size (see Table 1). Second, loans are restricted to be no more than 50% of vested balances. This restriction, coupled with application fees, means that a 401(k) loan may be economically unattractive for participants with low plan balances. Loan utilization rates are highest for middle-income participants ($40,000 to $60,000 in annual compensation) and lower for those with very low incomes or very high incomes.

Figure 7 plots the time series of average total outstanding loan balances divided by plan balances among participants who have an outstanding 401(k) loan.[23] In the EBRI/ICI data, loan balances as a fraction of balances have varied between 12% and 16% over the 1996 to 2009 time period but exhibit no clear trend. Our sample of Aon Hewitt participants shows a similar pattern during the years it overlaps with the EBRI/ICI data, although the average loan-to-balance ratio is higher, ranging from 19% to 23%.

As with loan utilization, there are significant differences in the size of outstanding loan balances relative to 401(k) balances across different demographic groups. These are shown in the third column of Table 2 using the EBRI/ICI data from 2008 and in the fourth column using the Aon Hewitt data at year-end 2008. In both data sets, loan balances relative to plan balances decrease with age, tenure, plan balances, and salary.

Figure 8 shows the average nominal dollar value of outstanding 401(k) loan balances as reported by the PSCA, reported by the Investment Company Institute (using the EBRI/ICI data), and from our own calculations using the Aon Hewitt data. Average outstanding balances are very similar across all three data sources and are about $7,500 in 2008. They have increased slightly over time in the EBRI/ICI data and somewhat more substantially in the PSCA data.

Table 3 shows the distribution of the number of loans per participant in our 2008 Aon Hewitt participant-level sample, separately by the maximum number of loans allowed by the plan. There is no clear relationship between the number of loans allowed by a plan and the fraction of participants with an outstanding loan; loan utilization is highest in the plans that allow a maximum of two loans. The last two columns of Table 3 show the average total outstanding

[23] For participants with more than one 401(k) loan outstanding at a given time, the numerator sums loan balances across all the participant's outstanding loans. The denominator reflects total plan balances that do not net out outstanding loan balances. Private correspondence with Jack VanDerhei indicates that the Investment Company Institute reports erroneously describe the EBRI/ICI denominator as netting out loan balances.

loan to balance ratio and the average total outstanding loan balance by the number of outstanding loans held by participants. Both the loan to balance ratio and the total outstanding loan balance increase with the number of loans outstanding. Among participants with only one outstanding loan, loans represent 16% to 19% of total balances; among participants with two outstanding loans, loans represent 24% to 27% of total balances; and among participants with three outstanding loans, loans represent 29% of total balances. Average outstanding loan balances range from $5,305 to $11,225 among participants with only one loan to $16,779 among participants with three loans.

Because many of the demographic characteristics associated with loan utilization and the size of loan balances are highly correlated with each other, Table 4 reports results from regressions of loan utilization and loan balances as a fraction of total balances (conditional on having a loan outstanding) on demographic and plan characteristics using the Aon Hewitt participant-level data from the year-end closest to the date of the plan description that we have (2002, 2003 or 2004).[24] The sample in these regressions—participants in 87 plans at 79 companies that offer loans—is much larger than in our previous analysis because we do not require continuous data coverage from 2002 to 2008. Columns 1 and 2 show linear probability regression coefficients and standard errors where the dependent variable is a dummy for having a 401(k) loan outstanding and the only explanatory variables are dummies for demographic characteristics. Columns 3 and 4 add a set of plan loan feature dummy variables: whether the plan offers primary residence loans, the maximum number of loans permitted by the plan, how the loan interest rate is set, whether there is an application fee, whether the minimum loan amount for a general purpose loan is greater than $500, the minimum loan duration for a general purpose loan, and whether the maximum loan duration for a general purpose loan is less than five years. In columns 5 and 6, the dependent variable is loan balances as a fraction of total balances, and the only explanatory variables are demographic variables; columns 7 and 8 add plan feature controls.

Some of the coefficients on the demographic variables show patterns that differ from those shown in Table 2. Instead of following a hump shape, the probability of having a loan

[24] Because plans change their provisions over time, restricting the data to the year-end extract that is closest to the plan description date reduces measurement error in the plan variables. This means that the data in the regression come from different years. The statistics on loan utilization in the Aon Hewitt and EBRI/ICI data are fairly stable over time, so some mixing across the relatively short span of three years should not be problematic.

increases with tenure and decreases with compensation. The loan-to-total balance ratio is hump-shaped with respect to age and increasing with respect to compensation, rather than decreasing with respect to these variables. Using administrative data from Vanguard, Mitchell and Lu (2010) find similar relationships between demographic characteristics and loan utilization. The patterns of the demographic coefficients do not change much when the plan feature controls are added.

A few interesting patterns emerge from the coefficients on the 401(k) loan features in columns 3 and 7 of Table 4. Conditional on demographic characteristics, the probability of having a loan outstanding decreases with the loan interest rate; participants in plans that charge more than prime plus one are 10 percentage points less likely to borrow against their balances than participants in plans that charge only the prime rate. However, the size of loans that do get taken out are slightly larger (4% of total balances) in plans that charge more than prime plus one than in plans that charge the prime rate. Mitchell and Lu (2010) also find that a higher loan interest rate is related to a lower probability of having a 401(k) loan but a higher loan balance conditional on having a loan. Imposing a maximum general purpose loan duration of less than five years is associated with a decrease in loan size of 2% of total balances, and allowing more loans outstanding is associated with larger loan-to-balance ratios. Surprisingly, the probability of having a loan is highest in plans that allow up to two loans outstanding as compared to plans that allow either only one or more than two loans outstanding. It is difficult to think of a causal mechanism running from number of loans allowed to loan utilization that would generate this pattern. Similarly, the negative correlation between the probability of loan utilization and the option to take out a primary residence loan seems unlikely to be caused by the loan rule.

Table 5 reports the distribution of characteristics for 401(k) loans originated from 2002 to 2008 in our Aon Hewitt participant-level data. The sample is again restricted to the 27 plans for which we have continuous data coverage over the entire time span. The vast majority of loans—97%—are general purpose loans rather than primary residence loans.[25] The administrative data give no further insights into the purposes for which individuals take out 401(k) loans. The Survey of Consumer Finances, however, does collect more detailed information on the reasons why individuals borrow from their retirement savings plans. These are presented in Table 6 for

[25] Utkus and Young (2010) and Lu and Mitchell (2010) report that a similarly high fraction of loans in Vanguard administered savings plan are general purpose loans.

1998, 2001, 2004 and 2007. Note that there is quite a bit of variability over time in the reasons for taking out a 401(k) loan.[26] Interestingly, in some years up to one third of 401(k) loan recipients report using a 401(k) loan for either a home purchase or home improvement, uses that would potentially qualify for a longer-term primary residence loan. This far exceeds the fraction of individuals in the Aon Hewitt administrative data who take out a primary residence loan. These findings are not necessarily inconsistent. Individuals could take out a general purpose loan and use the proceeds for a primary residence; in this case, they would simply have to repay the loan within the five-year maximum legal time limit (or sooner, if their plan specifies a shorter maximum repayment period). The advantage of doing this is that a general purpose loan requires less documentation and, in some plans, also has a lower application fee. Other significant reasons cited for obtaining a 401(k) loan include the purchase of a vehicle or other durable goods (10% to 23%); education and medical expenses (5% to 16%); and occasional expenses like a wedding or divorce (6% to 12%).

Utkus and Young (2010) analyze the use of loan proceeds in a 2008 survey of savings plan participants and find broadly similar results. In contrast to the Survey of Consumer Finances, their survey allows respondents to specify multiple uses for the proceeds of a loan. They find that 40% of respondents borrow from their savings plan for investment purposes (including home purchases or improvements, vehicle purchases, and educational expenses), while 39% report borrowing to consolidate bills or pay off other bills. Few report using 401(k) loans purely for consumption reasons. Many of the loan expenditure categories in Table 6 and in Utkus and Young (2010) represent items frequently financed with loans, suggesting that 401(k) loans may be substituting for other sources of credit at potentially better terms.[27]

As shown in Table 5, the median size of a newly originated loan in 2008 was $4,000, with a 5th percentile amount of $1,050 and a 95th percentile amount of $26,000. Over the 2002 to 2008 time period covered by our data, less than 1% of loans were made for $50,000, the maximum legal amount. More were surely made at the 50% of plan balances threshold, although we cannot assess how binding that constraint is on loan size since we do not have balance data at exactly the time each participant took out a loan.

[26] Li and Smith (2010) find similar variability in the reasons for 401(k) loan taking.
[27] Li and Smith (2010) argue that households could be even more aggressive in substituting 401(k) loans for other sources of credit. According to their estimates, such substitutions could save households with 401(k) loans available to them $200 to $275 per year on average.

Despite the fact that most plans do allow participants to take out a general purpose loan for the full legal maximum duration of five years, most participants choose a much shorter repayment period. In 2008, 19% of loans were taken out with a repayment period of less than two years; another 18% had a repayment period of two to three years. Only 26% had a repayment period of five years or more.

The distribution of interest rates for new loans originated between 2002 and 2008 is also shown in Table 5.[28] Over the entire 2002 to 2008 period, interest rates largely fall in the range of 4.00% to 9.25%. The median monthly repayment amount for new loans is $130 in 2008, but the 5th percentile repayment amount is just $31 per month, whereas the 95th percentile repayment amount is $603 per month.

V. Conclusion

This paper has documented the types of loan provisions in 401(k) savings plans and how participants use 401(k) loans. While a minority of savings plan participants use 401(k) loans at any given point in time—about 22% in our calculations based on participant-level data from Aon Hewitt—a much higher fraction will use a 401(k) loan over a longer period of time—slightly fewer than half of those whom we observe over a seven-year period from 2002 through 2008.

401(k) loan utilization varies with demographic characteristics. The fraction of participants with a loan at a point in time follows a hump-shaped pattern with respect to age, tenure, salary, and plan balances, whereas the size of outstanding loan balances as a fraction of plan balances (conditional on having a loan outstanding) is decreasing in these characteristics. When these variables are controlled for simultaneously in a regression, the probability of having a loan is still hump-shaped with respect to age and balances, but it is increasing in tenure and decreasing in compensation; normalized loan size conditional on having a loan is still decreasing with respect to tenure and balances, but hump-shaped with respect to age and increasing with respect to compensation. Some plan characteristics are also correlated with loan utilization. Participants are less likely to use a loan in plans that charge a higher interest rate, and conditional on having a loan, total loan balances are smaller as a fraction of plan balances when fewer loans can be outstanding at once, the interest rate is low, and the maximum loan duration allowed is

[28] This distribution differs from that shown in Figure 5 in that Figure 5 counts each plan-month mode as one observation, whereas Table 5 counts each loan as one observation.

short. However, these correlations must be interpreted with caution, since some of them—such as the negative correlation between a plan offering a primary residence loan and the probability that its participants take out a loan—seem inconsistent with a causal mechanism running from the plan feature to loan utilization.

References

Burton, Jonathan (2008). "Critics Detail the Ills of 401(k) Debit Cards," Wall Street Journal, July 22, 2008, page D6, http://online.wsj.com/article/SB121668972397572373.html (accessed August 1, 2008).

Bureau of Labor Statistics (1995, 1998, 1999). "Employee Benefits in Medium and Large Private Establishments." Washington, DC: U.S. Department of Labor, Bureau of Labor Statistics.

Aon Hewitt (2011). Leakage of Participants DC Assets: How Loans, Withdrawals, and Cashouts are Eroding Retirement Income. http://www.aon.com/attachments/thought-leadership/survey_asset_leakage.pdf (accessed May 26, 2011).

Holden, Sarah, Jack VanDerhei and Luis Alonso (2009). "401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2008." Investment Company Institute Research Perspective, Vol. 15, No. 2 (October 2009) http://www.ici.org/pdf/per15-02.pdf (accessed September 27, 2010).

Holden, Sarah, Jack VanDerhei, and Luis Alonso (2010). "401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2009." Investment Company Institute Research Perspective, Vol. 16, No. 3 (November 2010) http://www.ici.org/pdf/per16-03.pdf (accessed April 27, 2011).

Internal Revenue Service, United States Department of Treasury (2011). "Retirement Plans FAQs Regarding Loans." http://www.irs.gov/retirement/article/0,,id=162415,00.html (accessed April 20, 2011)

Li, Geng and Paul A. Smith (2010). "401(k) Loans and Household Balance Sheets." *National Tax Journal* 63(3), pp. 479-508.

Lu, Timothy Jun and Olivia S. Mitchell (2010). "Borrowing from Yourself: The Determinants of 401(k) Loan Patterns." University of Michigan Retirement Research Center Working Paper No. 2010-221.

Profit Sharing/401(k) Council of America (1999). "Plan Loan Restriction Study." (http://www.psca.org/RESEARCHDATA/PlanLoanRestrictionStudy/tabid/176/Default.aspx (accessed July 10, 2008).

Profit Sharing/401(k) Council of America (various). "Annual Survey of Profit Sharing and 401(k) Plans." Profit Sharing/401(k) Council of America, Chicago, IL.

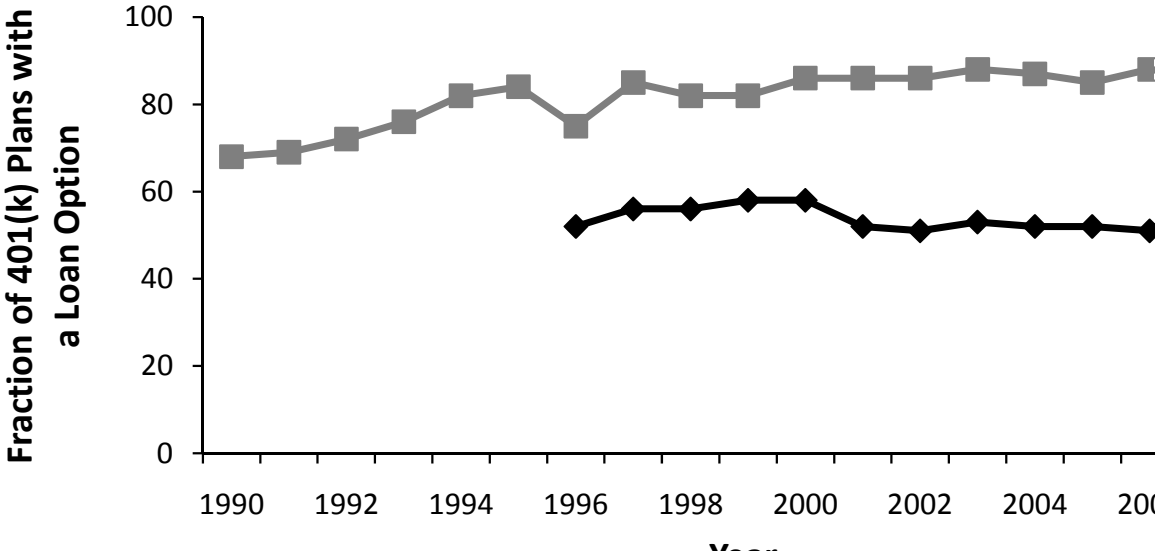
Profit Sharing/401(k) Council of America. "401(k) Loans: When you need your money NOW." http://www.401k.org/401kloans.html (accessed July 10, 2008)

Utkus, Stephen P. and Jean A. Young (2010). "Financial Literacy and 401(k) Loans." Pension Research Council Working Paper WP2010-28.

U.S. Government Accountability Office (2009). "401(k) Plans: Policy Changes Could Reduce the Long-Term Effects of Leakage on Workers' Retirement Savings," GAO-09-715.

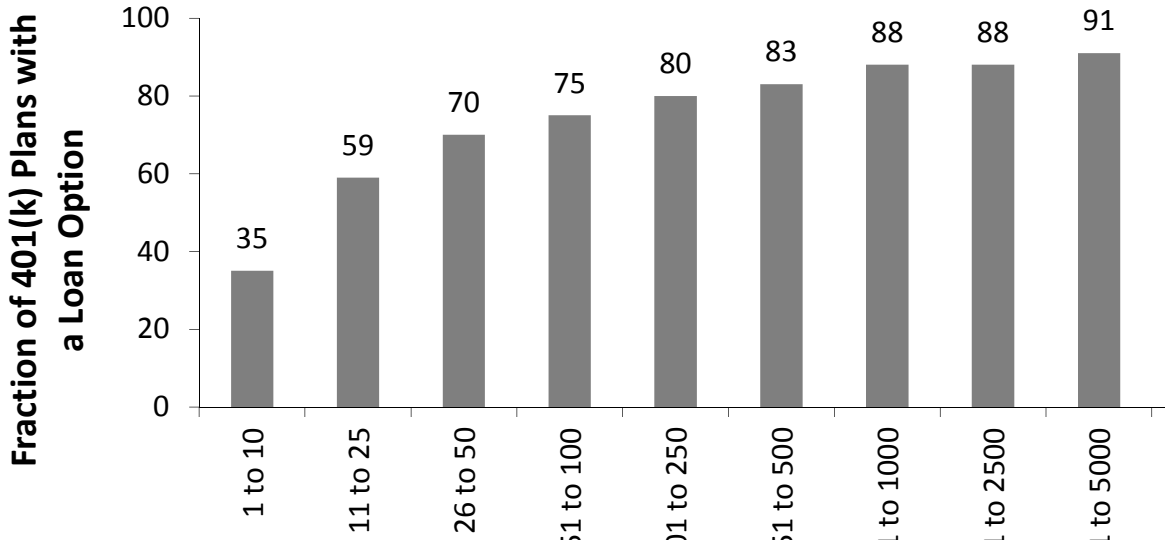
VanDerhei, Jack, Russell Galer, Carol Quick, and John Rea (1999). "401(k) Plan Asset Allocation, Account Balances, and Loans." Investment Company Institute Perspective, Vol. 5, No. 1 (January 1999) http://www.ici.org/perspective/per05-01.pdf (accessed July 9, 2008).

FIGURE 1. Fraction of 401(k) Plans with a Loan Option (1990-2009)



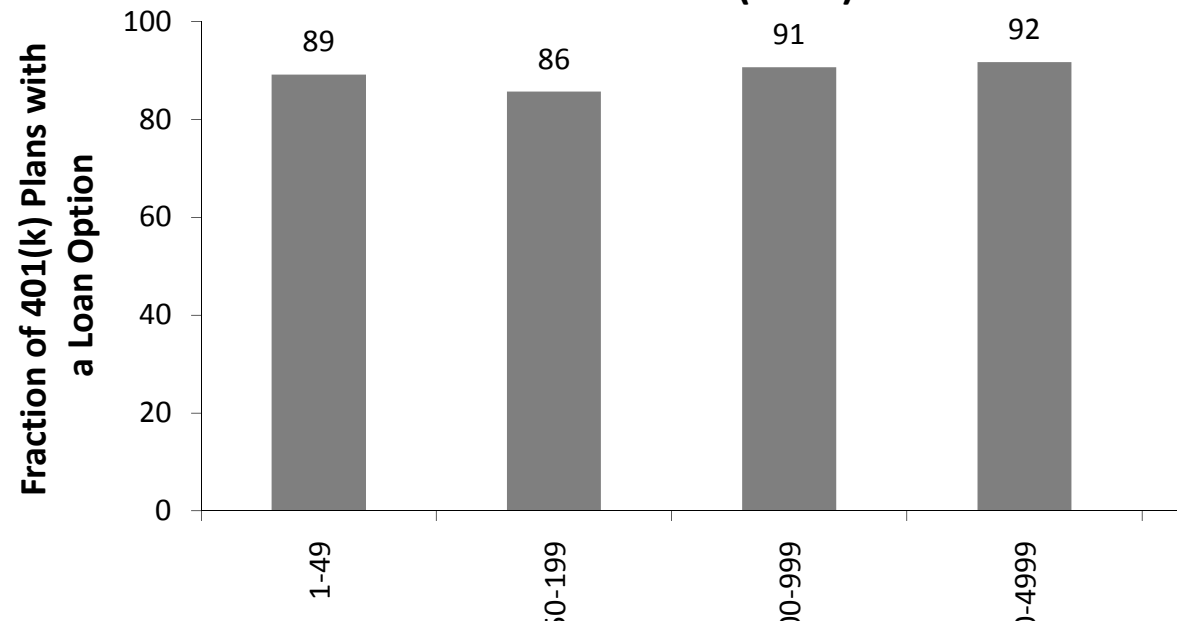
Notes: EBRI/ICI statistics come from a series of Investment Company Institute reports starting in 1999, including the first report by VanDerhei et al. (1999) and the most recent report by Holden, VanDerhei, and Alonso (2010). PSCA statistics come from various issues of the Profit Sharing/401(k) Council of America's "Annual Survey of Profit Sharing and 401(k) Plans."

FIGURE 2A. 401(k) Loan Availability by Plan Size
EBRI/ICI (2009)



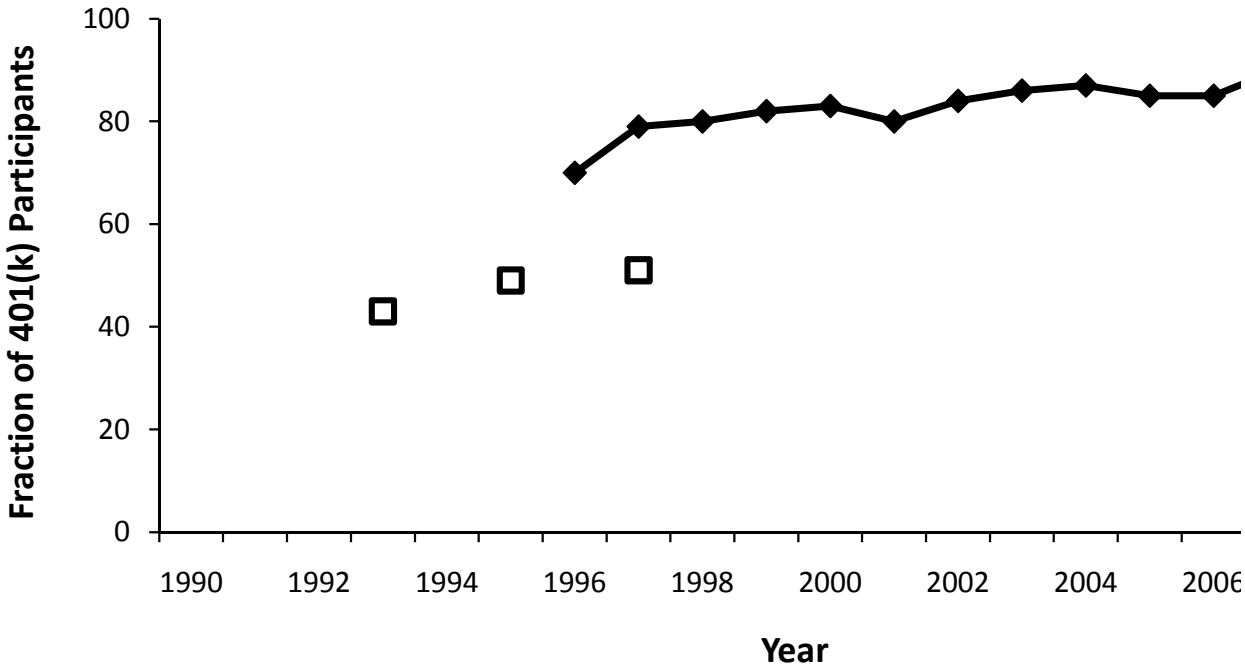
Notes: Holden, VanDerhei, and Alonso (2010).

FIGURE 2B. 401(k) Loan Availability by Plan Size
PSCA (2009)



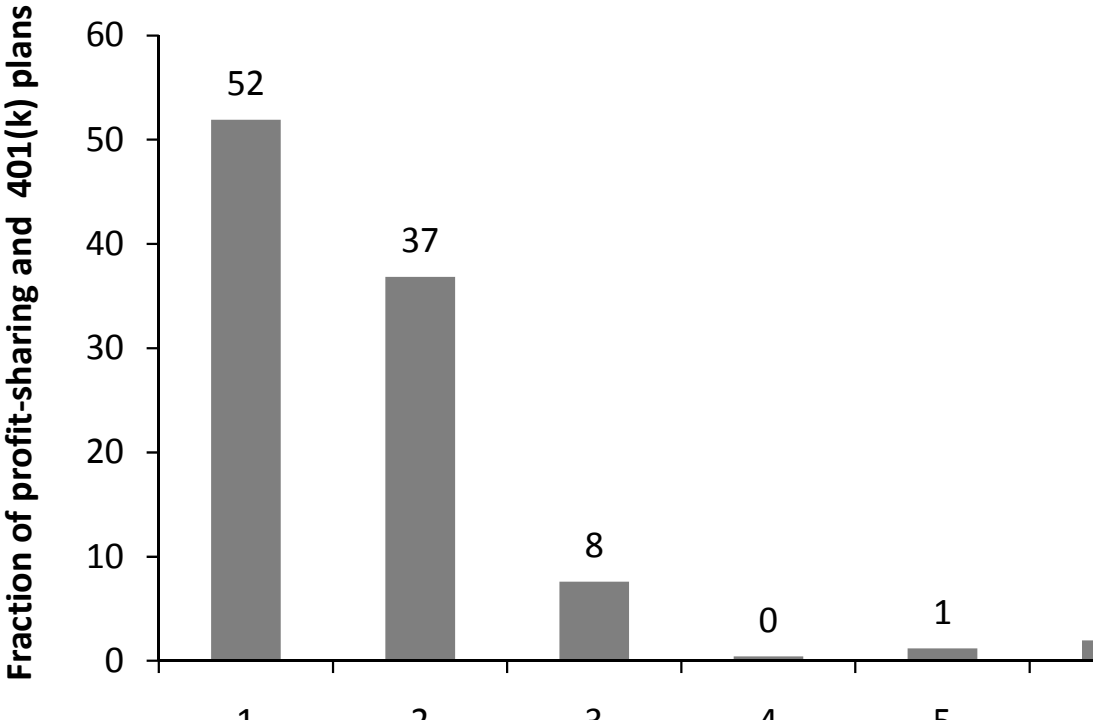
Notes: Profit Sharing/401(k) Council of America, "Annual Survey of Profit Sharing and 401(k) Plans."

FIGURE 3. Fraction of 401(k) Participants in a Plan with a
Option (1990-2009)



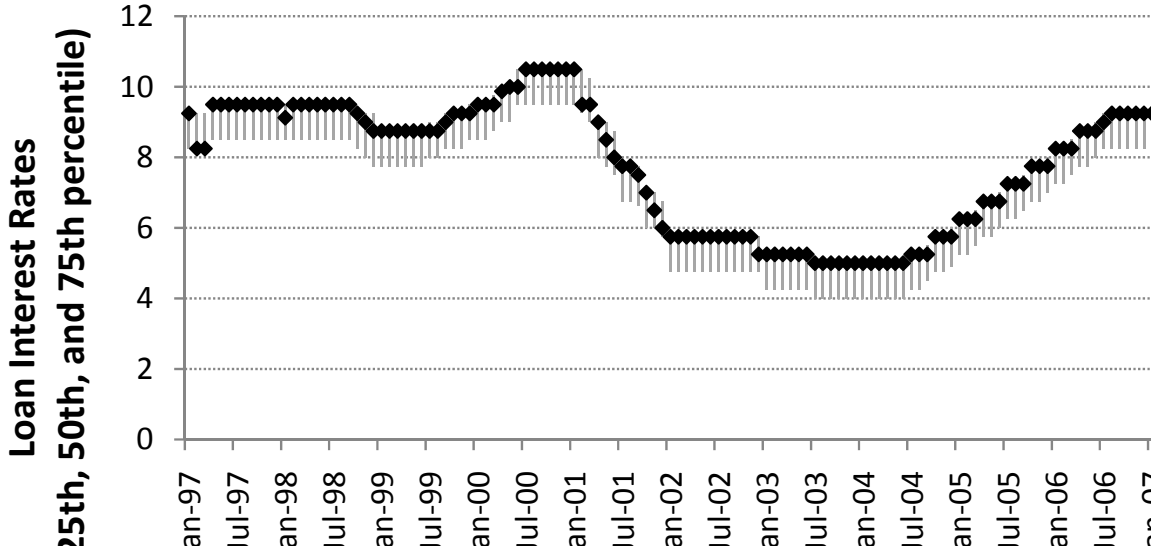
Notes: EBRI/ICI statistics come from a series of Investment Company Institute reports starting in 1999, including the first report by VanDerhei et al. (1999), and the most recent report by Holden, VanDerhei and Alonso (2010). EBS statistics come from various issues of the Department of Labor's "Employee Benefits in Medium and Large Private Establishments."

FIGURE 4. Maximum Number of Loans Allowed: PSCA (2009)



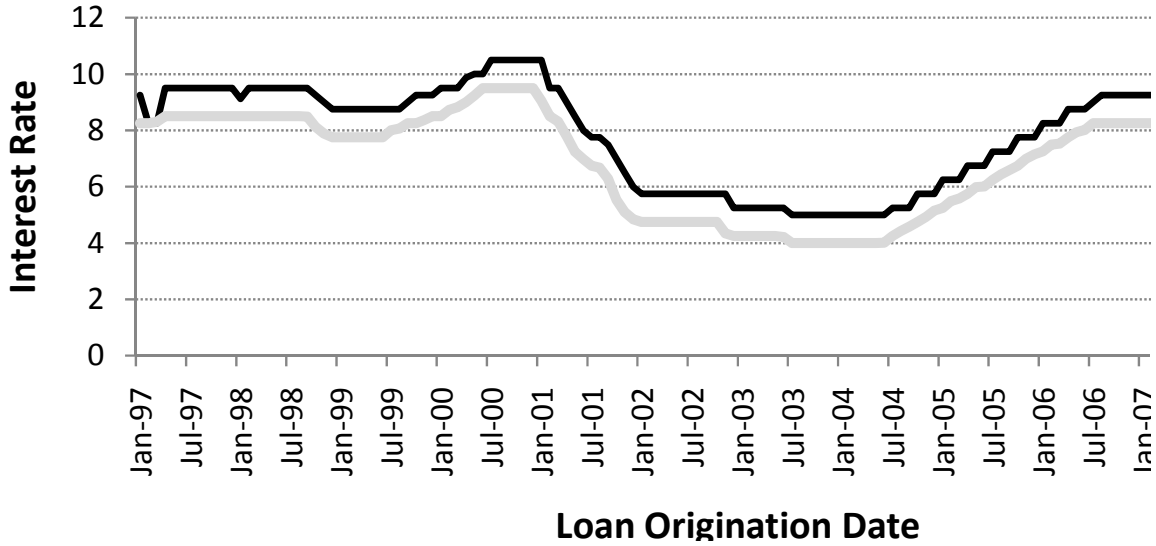
Notes: PSCA statistics come from the Profit Sharing/401(k) Council of America's "Annual Survey of Profit Sharing and 401(k) Plans."

FIGURE 5A. Distribution of 401(k) Loan Interest Rate 1997-2008



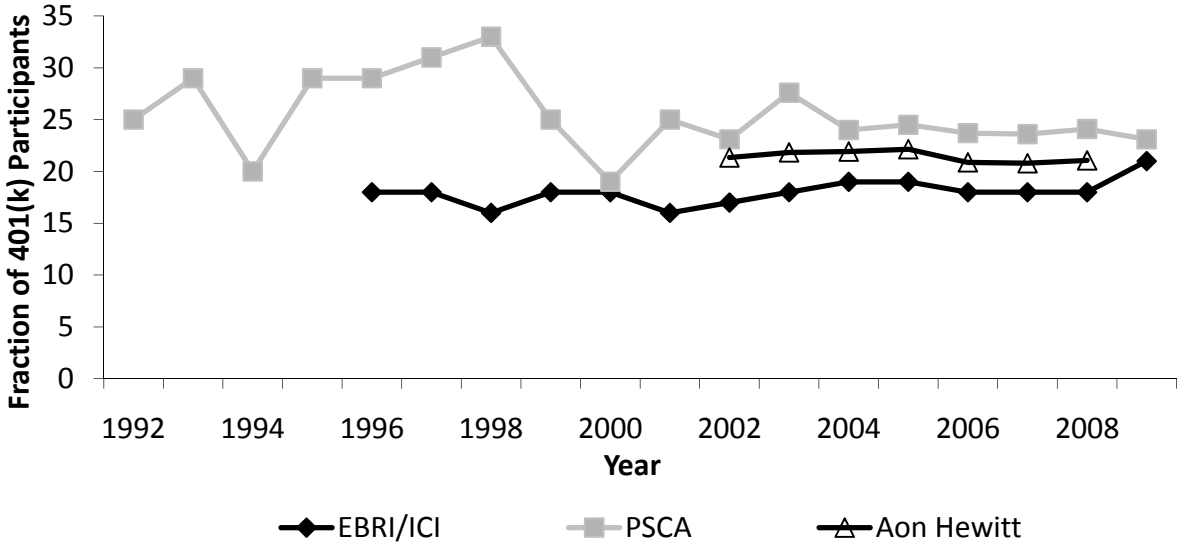
Notes: Authors' calculations using the Aon Hewitt loan-level data on 531,126 loans from 27 plans at 25 companies for which we have data at every year-end from 2002 to 2008. 1997 is the origination year for the oldest general-purpose loans in the dataset. Individuals with zero or missing account balances are excluded.

Figure 5B. Median 401(k) Loan Interest Rates and th Prime Rate (1997-2008)



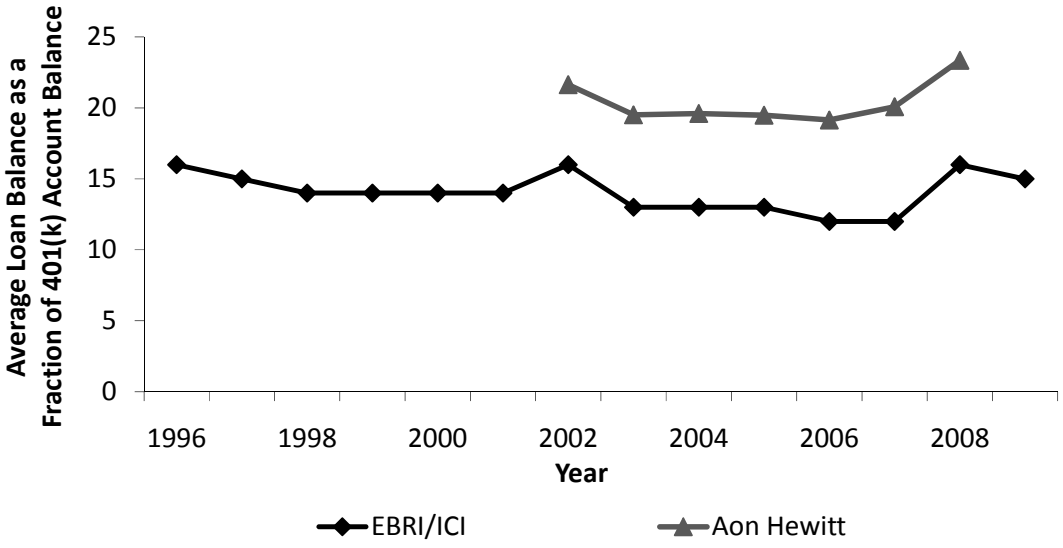
Notes: Authors' calculations using the Aon Hewitt loan-level data on 531,126 loans from 27 plans at 25 companies for which we have data at every year-end from 2002 to 2008. 1997 is the origination year for the oldest general-purpose loans in the dataset. Individuals with zero or missing account balances are excluded.

FIGURE 6. Fraction of Participants with an Outstanding 401(k) Loan (1992-2009)



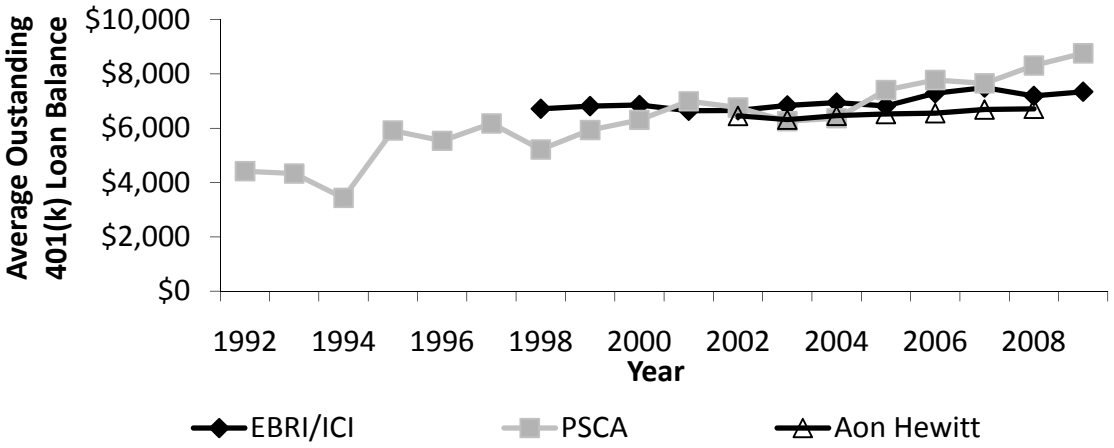
Notes: EBRI/ICI statistics come from a series of Investment Company Institute reports starting in 1999, including the first report by VanDerhei et al. (1999), and the most recent report by Holden, VanDerhei, and Alonso (2010). PSCA statistics come from various issues of the Profit Sharing/401(k) Council of America's "Annual Survey of Profit Sharing and 401(k) Plans." Aon Hewitt statistics come from the authors' calculations using 3,896,412 employee-year observations from 27 plans at 25 companies for which we have data at every year-end from 2002 to 2008. Individuals with zero or missing account balances are excluded.

FIGURE 7. Outstanding Loan Balances as a Fraction of 401(k) Balances (1996-2009) (Conditional on Having Loan Balances)



Notes: EBRI/ICI statistics come from a series of Investment Company Institute reports starting in 1999, including the first report by VanDerhei et al. (1999), and the most recent report by Holden, VanDerhei, and Alonso (2010). Aon Hewitt statistics come from the authors' calculations using 833,433 employee-year observations from 27 plans at 25 companies for which we have data at every year-end from 2002 to 2008. Individuals with zero or missing account balances are excluded. In the Aon Hewitt data, we winsorize the top and bottom 0.5% of the loan-to-balance observations in order to reduce the impact of outliers on the average.

FIGURE 8. Average Outstanding 401(k) Loan Balances (1992-2009)



Notes: EBRI/ICI statistics come from a series of Investment Company Institute reports starting in 1999, including the first report by VanDerhei et al. (1999), and the most recent report by Holden, VanDerhei, and Alonso (2010). PSCA statistics come from various issues of the Profit Sharing/401(k) Council of America's "Annual Survey of Profit Sharing and 401(k) Plans." Aon Hewitt statistics come from the authors' calculations using 833,433 employee-year observations from 27 plans at 25 companies for which we have data at every year-end from 2002 to 2008. Individuals with zero or missing account balances are excluded.

TABLE 1. Firm-Level 401(k) Loan Provisions (2002-2004)

General provisions		**Loan duration**	
Offers a 401(k) loan option		Minimum, general purpose	
For general purpose	100.0%	≤ 1 months	13.8%
For a primary residence	73.6%	> 1 to 6 months	16.1%
Maximum number of loans outstanding		> 6 to 12 months	65.5%
1	33.3%	Not specified	4.6%
2	56.3%	Maximum, general purpose	
≥ 3	10.4%	< 5 years	21.8%
Application fee, general purpose		5 years	73.6%
$0	5.8%	Not specified	4.6%
> $0 to $25	5.8%	Minimum, primary residence	
> $25 to $50	34.5%	≤ 1 months	10.5%
> $50 to $75	13.8%	> 1 to 6 months	9.0%
> $75	3.5%	> 6 to 12 months	34.3%
Not specified	36.8%	> 12 to 60 months	16.4%
Minimum loan amount, general purpose		> 60 to 72 months	25.4%
< $500	1.1%	Not specified	4.5%
$500	26.4%	Maximum, primary residence	
> $500 to $1,000	69.0%	< 10 years	3.0%
> $1,000	3.4%	10 years	31.3%
		15 years	46.3%
Interest rate provisions		20 to 25 years	6.0%
Interest rate		30 years	9.0%
Prime	25.3%	Not specified	4.5%
> Prime to prime + 1	59.8%		
> Prime + 1 to prime + 2	5.8%		
Other	5.8%		
Not specified	3.5%		
Interest rate update frequency			
Daily	4.6%		
Monthly	54.0%		
Quarterly	33.3%		
Annually	1.1%		
Other frequency	1.1%		
Not specified	5.8%		

Source: Authors' calculations from the Aon Hewitt plan documentation for 87 plans at 79 companies for which we have documentation from one year between 2002 and 2004. Percentages sometimes do not add up to 100% due to rounding.

TABLE 2. 401(k) Loan Utilization and Balances by Demographic Characteristics (2008)

	Fraction of Participants with a 401(k) Loan		Average Loan Balance as a Fraction of Balances	
	EBRI/ICI	**Aon Hewitt**	**EBRI/ICI**	**Aon Hewitt**
Overall	18%	21%	16%	23%
Age				
20s	10%	10%	29%	28%
30s	20%	23%	25%	26%
40s	22%	26%	18%	23%
50s	19%	23%	13%	20%
60s	11%	14%	11%	22%
Tenure (years)				
0 to 2	6%	3%	25%	27%
> 2 to 5	15%	13%	26%	27%
> 5 to 10	23%	28%	24%	26%
> 10 to 20	26%	33%	17%	23%
> 20 to 30	25%	30%	12%	16%
> 30	18%	26%	9%	14%
Plan balance				
≤ $10,000	12%	13%	39%	30%
> $10,000 to $20,000	26%	31%	33%	25%
> $20,000 to $30,000	26%	32%	29%	23%
> $30,000 to $40,000	26%	31%	26%	22%
> $40,000 to $50,000	25%	31%	24%	21%
> $50,000 to $60,000	24%	30%	21%	20%
> $60,000 to $70,000	23%	31%	19%	19%
> $70,000 to $80,000	22%	29%	18%	19%
> $80,000 to $90,000	21%	29%	16%	18%
> $90,000 to $100,000	20%	28%	15%	16%
> $100,000 to $200,000	18%	25%	11%	12%
> $200,000	12%	17%	5%	6%
Compensation				
≤ $40,000	19%	15%	21%	23%
> $40,000 to $60,000	27%	23%	19%	22%
> $60,000 to $80,000	24%	23%	17%	20%
> $80,000 to $100,000	20%	23%	14%	19%
> $100,000	14%	16%	11%	17%
Participants	--	638,902	--	134,584

Notes: EBRI/ICI statistics come from Holden, VanDerhei, and Alonso (2009). Aon Hewitt statistics come from the authors' calculations using the Aon Hewitt individual-level data in 2008 from 27 plans at 25 companies for which we have data at every year-end from 2002 to 2008. Individuals with zero or missing account balances are excluded. Seven plans at five companies are dropped from the salary range rows due to missing salary data. A small number of individuals are dropped from the age and tenure rows due to missing age or tenure data. The first two columns show the fraction of 401(k) participants with an outstanding loan at year-end. The last two columns show outstanding loan balances as a fraction of total 401(k) balances at year-end among participants with an outstanding loan. In the Aon Hewitt data, we winsorize the top and bottom 0.5% of the loan-to-balance observations in order to reduce the impact of outliers.

TABLE 3. Number of Loans Outstanding by Maximum Number of Loans Allowed (2008)

Maximum number of loans allowed in plan	Number of loans outstanding	Fraction of participants	Average total loan balance/ 401(k) balance	Average total outstanding loan balance
1	0 loans outstanding	85.7%	0.0%	$0
	1 loan outstanding	14.3%	16.3%	$5,305
2	0 loans outstanding	74.5%	0.0%	$0
	1 loan outstanding	12.4%	19.1%	$6,212
	2 loans outstanding	13.1%	27.3%	$8,529
3	0 loans outstanding	88.5%	0.0%	$0
	1 loan outstanding	5.7%	18.6%	$11,225
	2 loans outstanding	2.2%	23.5%	$14,066
	3 loans outstanding	3.6%	29.2%	$16,779

Notes: Authors' calculations using the Aon Hewitt individual-level data in 2008 from 27 plans at 25 companies for which we have data at every year-end from 2002 to 2008. Individuals with zero or missing account balances were excluded. Thirty-eight individuals were dropped whose account and loan records did not match, leaving a sample size of 638,864.

TABLE 4. The Association of Demographic Characteristics and Plan Features with 401(k) Loan Utilization (2002-2004)

	Has a 401(k) Loan Outstanding				Loan Balance as a Fraction of Total Balances			
	Coefficient	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**
Constant	0.0449**	(0.0177)	0.0846**	(0.0391)	0.2806***	(0.0113)	0.2301***	(0.0193)
Demographic Controls								
Age								
20s (omitted)								
30s	0.0308***	(0.0059)	0.0334***	(0.0043)	0.0079***	(0.0025)	0.0074***	(0.0021)
40s	0.0166**	(0.0082)	0.0202***	(0.0065)	0.0095***	(0.0033)	0.0096***	(0.0031)
50s	-0.0249**	(0.0121)	-0.0192*	(0.0114)	0.0037	(0.0038)	0.0047	(0.0036)
60s	-0.1131***	(0.0141)	-0.1045***	(0.0131)	-0.0073	(0.0051)	-0.0032	(0.0044)
Tenure (years)								
0 to 2 (omitted)								
> 2 to 5	0.1094***	(0.0107)	0.1114***	(0.0114)	-0.0272***	(0.0074)	-0.0177**	(0.0071)
> 5 to 10	0.2244***	(0.0208)	0.2283***	(0.0194)	-0.0310***	(0.0103)	-0.0152*	(0.0084)
> 10 to 20	0.2933***	(0.0271)	0.2986***	(0.0256)	-0.0306**	(0.0120)	-0.0147	(0.0089)
> 20 to 30	0.3187***	(0.0262)	0.3196***	(0.0253)	-0.0234**	(0.0106)	-0.0109	(0.0090)
> 30	0.3101***	(0.0286)	0.3038***	(0.0289)	-0.0273**	(0.0106)	-0.0167*	(0.0090)
Plan balance								
≤ $10,000 (omitted)								
> $10,000 to $20,000	0.0896***	(0.0091)	0.0852***	(0.0099)	-0.0397***	(0.0038)	-0.0430***	(0.0034)
> $20,000 to $30,000	0.0778***	(0.0108)	0.0722***	(0.0106)	-0.0570***	(0.0050)	-0.0632***	(0.0042)
> $30,000 to $40,000	0.0604***	(0.0135)	0.0538***	(0.0129)	-0.0702***	(0.0061)	-0.0781***	(0.0052)
> $40,000 to $50,000	0.0443***	(0.0155)	0.0374**	(0.0146)	-0.0799***	(0.0064)	-0.0889***	(0.0055)
> $50,000 to $60,000	0.0291*	(0.0174)	0.0218	(0.0160)	-0.0908***	(0.0068)	-0.1010***	(0.0057)
> $60,000 to $70,000	0.0210	(0.0187)	0.0129	(0.0170)	-0.0997***	(0.0071)	-0.1107***	(0.0057)
> $70,000 to $80,000	0.0074	(0.0206)	-0.0010	(0.0189)	-0.1091***	(0.0077)	-0.1204***	(0.0060)
> $80,000 to $90,000	0.0054	(0.0227)	-0.0031	(0.0204)	-0.1188***	(0.0076)	-0.1309***	(0.0060)
> $90,000 to $100,000	-0.0065	(0.0221)	-0.0162	(0.0204)	-0.1282***	(0.0077)	-0.1408***	(0.0064)
> $100,000 to $200,000	-0.0332	(0.0271)	-0.0450*	(0.0252)	-0.1621***	(0.0083)	-0.1758***	(0.0067)
> $200,000	-0.1166***	(0.0323)	-0.1294***	(0.0307)	-0.2186***	(0.0094)	-0.2341***	(0.0073)

Compensation								
≤ $40,000 (omitted)								
> $40,000 to $60,000	-0.0367	(0.0244)	-0.0364*	(0.0211)	0.0053	(0.0127)	0.0050	(0.0094)
> $60,000 to $80,000	-0.0126	(0.0114)	-0.0174*	(0.0095)	0.0101**	(0.0047)	0.0102***	(0.0032)
> $80,000 to $100,000	-0.0306*	(0.0174)	-0.0395***	(0.0146)	0.0198***	(0.0065)	0.0205***	(0.0045)
> $100,000	-0.0544***	(0.0207)	-0.0641***	(0.0172)	0.0244***	(0.0067)	0.0249***	(0.0046)
Missing	-0.0890***	(0.0214)	-0.0970***	(0.0197)	0.0341***	(0.0072)	0.0322***	(0.0050)
Plan Loan Features								
Primary residence loans			-0.0643***	(0.0213)			0.0051	(0.0081)
Maximum number of loans								
1 (omitted)								
2			0.0896***	(0.0213)			0.0239***	(0.0074)
≥ 3			-0.0101	(0.0301)			0.0683***	(0.0111)
Interest rate								
Prime (omitted)								
> Prime to prime + 1			-0.0277	(0.0212)			0.0059	(0.0081)
> Prime + 1 to prime + 2			-0.1015***	(0.0317)			0.0399***	(0.0132)
Other			0.0366	(0.0397)			-0.0093	(0.0138)
Application fee			-0.0097	(0.0203)			-0.0068	(0.0072)
Minimum loan amount								
> $500			0.0009	(0.0191)			0.0100	(0.0097)
Minimum loan duration								
≤ 1 month (omitted)								
> 1 to 6 months			-0.0332	(0.0406)			0.0232	(0.0163)
> 6 to 12 months			-0.0127	(0.0310)			0.0202	(0.0141)
Maximum loan duration								
< 5 years			0.0072	(0.0186)			-0.0167**	(0.0066)
Participants	1,376,025		1,376,025		314,033		314,033	
Plans	87		87		87		87	
Companies	79		79		79		79	
R^2	0.0755		0.0856		0.1787		0.2002	

Notes: Authors' calculations from the Aon Hewitt individual-level data for 87 plans at 79 companies for which we have data in one year between 2002 and 2004. Individuals with zero or missing account balances are excluded. A small number of individuals are dropped from the regression due to missing age or tenure data. Standard errors are clustered at the plan level. We winsorize the top and bottom 0.5% of the loan-to-balance observations in order to reduce the impact of outliers. * p<0.10, ** p<0.05, *** p<0.01

TABLE 5. Characteristics of Originated 401(k) Loans (2002-2008)				
	2002	**2005**	**2008**	**2002-2008**
Loan type				
General purpose	96.3%	97.2%	97.6%	97.1%
Primary residence	3.7%	2.8%	2.4%	2.9%
Loan amount				
5th percentile	$1,000	$1,000	$1,050	$1,000
25th percentile	$1,800	$1,761	$1,792	$1,800
Median	$3,983	$4,000	$4,000	$4,000
75th percentile	$8,500	$9,000	$9,750	$9,000
95th percentile	$23,000	$25,000	$26,000	$25,000
Loan duration				
< 1 year	2.4%	1.8%	1.5%	1.7%
1 to < 2 years	17.0%	17.2%	17.0%	16.9%
2 to < 3 years	18.8%	18.1%	17.7%	18.1%
3 to < 4 years	14.5%	14.7%	12.7%	13.8%
4 to < 5 years	22.8%	24.4%	25.7%	24.7%
≥ 5 years	24.5%	23.8%	25.5%	24.9%
Loan interest rate				
5th percentile	4.75%	5.18%	5.00%	4.00%
25th percentile	4.75%	6.25%	5.20%	5.00%
Median	5.75%	6.75%	6.00%	5.81%
75th percentile	5.75%	7.25%	6.25%	8.25%
95th percentile	5.82%	7.75%	8.25%	9.25%
Payment (monthly)				
5th percentile	$32	$30	$31	$31
25th percentile	$73	$74	$74	$74
Median	$127	$130	$130	$129
75th percentile	$233	$246	$254	$245
95th percentile	$538	$587	$603	$576
Loans	54,860	61,166	59,876	430,984

Notes: Authors' calculations using the Aon Hewitt loan-level data from 27 plans at 25 companies for which we have data at every year-end from 2002 to 2008. Individuals with zero or missing account balances are excluded.

TABLE 6. Reasons For Obtaining a 401(k) Loan (1998-2007)

Reason	1998	2001	2004	2007
Home Purchase/improvement	35.1%	35.9%	23.4%	14.3%
Investments and other real estate	1.6	5.9	1.6	3.4
Vehicles, appliances and other durables	11.2	23.4	20.0	10.2
Education and medical expenses	15.9	4.6	12.7	11.8
Occasional expenses (e.g. wedding, divorce)	7.8	6.0	6.1	11.7
Other	28.5	24.3	36.2	48.7

Notes: Authors' calculations from the Survey of Consumer Finances.